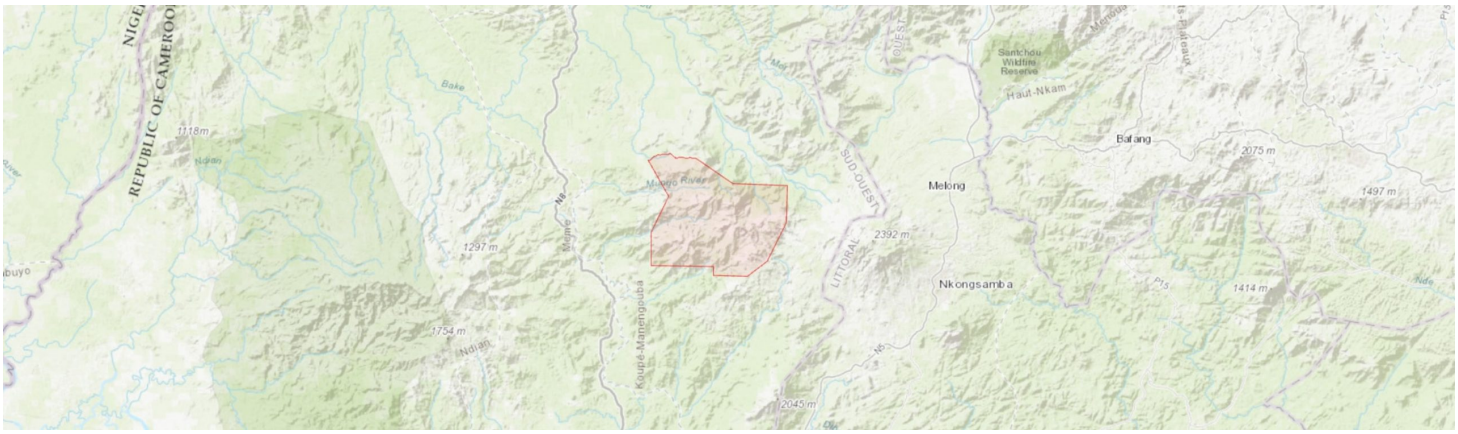
Bakossi National Park

CMNTIPA027



Country: **Cameroon**
Administrative region: **Southwest (Region)**
Central co-ordinates: **5.06000 N, 9.62000 E**
Area: **293.2km²**

Qualifying IPA criteria

A(i)

IPA assessment rationale

Bakossi National Park likely qualifies as an IPA under multiple criteria. It is one of the largest and most intact areas of submontane moist tropical forest in Cameroon and appears to have high species diversity. It has also been reported to have a very high number of endemic species as well as many social, economic or culturally important species (Cheek et al., 2004), although the latter require formal comparison with other sites to meet the IPA criteria. Abundant evidence of globally threatened species with significant populations at the site is documented here for qualification under criterion A(i).

Site description

Bakossi National Park is a large area of submontane rainforest in Kupe-Mwanenguba Division, Southwest Region, Cameroon, along the Cameron volcanic line approximately 100 km from the coast. The main north-south running Kumba-Mamfe N8 road lies 10-15 km to the west and to the east towns and villages lie along the high valley which separates the park from Mt Mwanenguba and Mont Kupe further to the south. The administrative headquarters are sited within the town of Bangem 5 km beyond the northeast border. The National Park corresponds largely to the Mwendolengo mountains, as well as part of the Edib hills to the south. The range to the north of the Mbwe (Mbu) valley border is known as the Mwenzekong mountains which forms the southeastern part of the large Banyang Mbo reserve. The National Park takes its name from the much larger Bakossi tribal area (Cheek et al., 2004). It was created in November 2007 by Prime Ministerial decree No 2007/1459/PM, with safeguarding plant as well as animal species explicitly cited as objectives, together with protection of watersheds (Govt. Cameroon, 2007). This followed focus on the area by WWF and San Diego Zoo, Kew Gardens and the National Herbarium of Cameroon thanks to the GEF-World-Bank-MINEF (now MINEPDED) project, who surveyed the plant diversity of the wider Bakossi area between 1995 and 2003 (Cheek et al., 2004), resulting in proposals for a network of protected areas. Of these, however, only Bakossi National Park and Banyang Mbo Wildlife Sanctuary have been officially gazetted up to now.

Botanical significance

The Bakossi mountains are a major and relatively well preserved part of the Cameroon Highlands Forests ecoregion (WWF..., Cheek et al 2004), which represents one of the most diverse areas of tropical Africa. Cheek et al. (2004) report 2412 species in the larger 2390 km2 Bakossi checklist area and a particularly large number of local endemics. The richness per unit area is likely to be higher within the national park area although the number of local endemics may have been reduced somewhat by subsequent discoveries in other areas. The Cameroon Highlands follow a geological fault and represent a relatively narrow and small zone of submontane and montane forest in west or central Africa. Still close to the coast, diversity is boosted by high rainfall, while further north, much of these highlands have also been severely degraded by settlement and agriculture, with only small outposts of intact forest remaining (Cheek et al., 2000; Cheek et al., 2004; Cheek et al. 2010). A very high number of species from within the national park have been assessed as globally threatened under the IUCN red list scheme and for a large proportion of these, Bakossi National Park, sometimes together with Mt Kupe which has been more intensively surveyed, likely represents the most significant, if not the only, known population. Species currently endemic to the site itself include: Ledermanniella onanae, Hypolytrum subcompositus, Keetia bakossiorum, Pavetta rubentifolia, Memecylon bakossiense and Cola kodminensis. Unfortunately, many taxa recorded in Cheek et al. (2004) were collected around sites just outside the later gazetted National Park boundaries at Kodmin, Lake Edip and Nyandong. A certain latitude has been taken here to include several of these taxa where exact collection sites are unknown or interpreted to be very close to the boundary which is still not demarcated on the ground. However, a number of taxa had to be excluded and sites such as Lake Edip to the south and Bime rock to the northeast are notable, phytologically important, physical features requiring additional protection.

Habitat and geology

Although the terrain of the entire Kupe-Bakossi-Mwanenguba area is linked to the Cameroon line geological fault where the Congo craton and the West African plate meet, there is geological variation between the various peaks. Several phases of of geological activity are responsible. Uplifted basement complex rocks constitute part of the Bakossi mountains area (Cheek et al.,2020) and Wild (2004a) refers to metamorphic schists. However, much more recent volcanic activity is also prominent. Older than Mt Kupe and Mwanenguba, the volcanic rocks apparently derive from a period in the late Neogene when eruptive activity formed an inferior "white series" (Sieffermann, 1973; Wild, 2004a). Pouclet et al. (2005) date phonolite extrusions in the Bakossi mountains to the upper Miocene (7.55 +- 0.18 Ma), making them somewhat younger than trachytes of Ekomane in the Banyang Mbo sanctuary and much younger than the Pleistocene lava flows in the Bangem area. Intrusive (granite or syenite) inselbergs are also found throughout the area, such as Bime on the northeast border and Nyale rock in the southeast (Wild, 2004a). Like Mt Mwanenguba to the east (Wild, 2004a), the Edib mountains, at the southern edge of the site are an extinct volcano. Edib crater lake is just outside the site boundary.

The volcanic terrain gives rise to andosols in much of this area, although more clayey Nitrosols are predominant to the west and ferralsols to the east and north and may also feature in non-volcanic areas (Ngachi et al., 1992; Yerima & Ranst, 2005). Gleying also occurs due to high precipitation and mist (Wild, 2004a). Edib volcanic soils are less fertile than the highly cultivated soils of Kupe and Mwanenguba, corresponding presumably to their greater age (Wild, 2004a; Cheek et al., 2020). Birdlife (2021) describe clearings in the forest, especially near Kodmin, where forest apparently struggles to regrow. This may reflect poor soils and perhaps seasonal aridity without existing forest to draw down mist as horizontal precipitation, as well as reduced growth due to the impact of altitude and cloud on temperature, insolation and soil nutrient cycling (Wild, 2004a). It has strong conservation implications for forest clearance and shifting agriculture.

The whole region has high precipitation, augmented by horizontal precipitation which probably mitigates against reduced dry season rainfall. Birdlife (2021) suggest the Edib hills are the wettest part of the Bakossi IBA but parts of south western Kupe is likely wetter still, with up to 6-7 m possible (Cheek et al.,2020) and a mean of 4 m recorded at Nyasoso. At Bangem to the northeast the mean is only 2.8 m, although sources and periods differ (Wild 2004a, adapted from Ejedepang-Koge, 1986). Temperature varies little seasonally around 23-24 deg C and daily cycles are far greater. While latent heat from condensing air may in theory slightly reduce the normal lapse rate of 0.6 per 100m, reduced insolation due to cloud more than makes up for this (Wild, 2004a). Cloud cover and cloud forest - characterised by reduced tree stature, increased stem density, and abundance of tree ferns, epiphytes, mosses and ferns draping the forest - apparently extends to lower elevations in parts of Bakossi National Park than nearby Mount Mwanenguba and Mount Kupe (Wild, 2004a).

The area is an important watershed. The river Jide (Chide or Chede) flows south between Bakossi and Mwanenguba and joins the Mungo near Tombel. Another tributary of the Mungo river flows from the west of the Bakossi National Park, while the main tributary flows from the Rumpi Hills. The Mbwi (Mbu) drains to the north, flowing between Banyang and Bakossi to join the Cross river flowing west to Nigeria. The river Dikombe is fed by eastern Kupe and Mwanenguba and flows south to join the Wouri.

The vegetation of the wider area is extensively discussed by Cheek et al. (2004). The site is predominantly submontane cloud forest rich in epiphytes. There are also rocky areas, streams with reophytic communities, crater lakes and curious "grassland" areas amidst the forest.

Conservation issues

The boundaries of the National Park do not incorporate all of the rare or threatened taxa recorded, with particularly richly sampled areas close to the borders at Nyandong, Kodmin, Enyandong and

Lake Edip (Cheek et al., 2004). For this reason, sensitive management of the border regions are particularly important. The lowland forest to the west of the park is poorly surveyed and rich and valuable forest habitat likely extends beyond the boundary to the Kumba-Mamfé road, and indeed beyond to the Rumpi Hills area. Beyond the western border, and also to the northwest between the site and Banyang Mbo Wildlife Sanctuary, this forest is designated as production forest reserves, and a smaller area of palm oil plantation, all of which are currently inactive (MINFOF & WRI, 2021). It is important that if these areas to become actively exploited that they are well managed and every effort is made to ensure forest species are retained and habitat corridors remain to link the protected areas. To the east, northeast and south, small scale cultivation and settlement around the existing communities and roads are the main threats. Bangem is a moderately-sized town and the highlands between Mt Mwanenguba and the site boundary, as well as the Jide valley, have been substantially deforested. It is important to preserve or restore habitat corridors between the highlands of Mwanenguba, Kupe and Banyang Mbo, and also with the Baksossi, Mungo and Loum forest reserves to the south. Support for conservation amongst local leaders has been strong, although there is also local demand for roads and development (Cheek et al. 2004).
Although mineral exploitation permits have appeared to overlap the national park (MINFOF & WRI, 2013), the area is not among those where proven deposits have been demonstrated and mining activity does not appear likely in the near future (Tchindjang et al., 2017).

Site assessor(s)

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IPA criterion A species

SPECIES	QUALIFYING SUB-CRITERION	≥ 1% OF GLOBAL POPULATION	≥ 5% OF NATIONAL POPULATION	1 OF 5 BEST SITES NATIONALLY	ENTIRE GLOBAL POPULATION	SOCIO-ECONOMICALLY IMPORTANT	ABUNDANCE AT SITE
Hypolytrum subcompositus Lye & D.A.Simpson,	A(i)	✓	✓	✓	✓	–	
Keetia bakossiorum Cheek	A(i)	✓	✓	✓	✓	–	
Pavetta rubentifolia S.D.Manning	A(i)	✓	✓	✓	✓	–	
Phyllanthus nyale Petra Hoffm. & Cheek	A(i)	✓	✓	✓	–	–	
Memecylon bakossiense R.D.Stone, Ghogue & Cheek	A(i)	✓	✓	✓	✓	–	
Ledermanniella onanae Cheek	A(i)	✓	✓	✓	✓	–	
Cola kodminensis Cheek	A(i)	✓	✓	✓	✓	–	
Phyllanthus caesiifolius Petra Hoffm. & Cheek	A(i)	✓	✓	✓	–	–	
Amphiblemma monticola Jacq.-Fél.	A(i)	✓	✓	✓	–	–	
Begonia adpressa Sosef	A(i)	✓	✓	✓	–	–	
Begonia pelargoniiflora J.J.de Wilde & J.C.Arends	A(i)	✓	✓	✓	–	–	
Cyathula fernando-poensis Suess. & Friedrich	A(i)	✓	✓	✓	–	–	
Diospyros kupensis Gosline	A(i)	✓	✓	✓	–	–	
Dorstenia poinsettifolia Engl. var. etugeana B.J.Pollard	A(i)	✓	✓	✓	–	–	
Habenaria batesii la Croix	A(i)	✓	✓	✓	–	–	

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Impatiens frithii Cheek	A(i)	✓	✓	✓	–	–	
Impatiens letouzeyi Grey-Wilson	A(i)	✓	✓	✓	–	–	
Justicia leucoxiphus Vollesen, Cheek & Ghogue	A(i)	✓	✓	✓	–	–	
Manilkara zenkeri Lecomte ex Aubrév. & Pellegr.	A(i)	✓	✓	✓	–	–	
Mesanthemum jaegeri Jacq.-Fél.	A(i)	✓	✓	✓	–	–	
Octoknema bakossiensis Gosline & Malécot	A(i)	✓	✓	✓	–	–	
Pavetta muiriana S.D.Manning	A(i)	✓	✓	✓	–	–	
Piptostigma submontanum Ghogue, Sonké & Couvreur,	A(i)	✓	✓	✓	–	–	
Quassia sanguinea Cheek & Jongkind	A(i)	✓	✓	✓	–	–	
Rhaphidophora pusilla N.E.Br	A(i)	✓	✓	✓	–	–	
Rinorea fausteana Achound.	A(i)	✓	✓	✓	–	–	
Rothmannia ebamutensis Sonké	A(i)	✓	✓	✓	–	–	
Sabicea bullata Zemagho, O.Lachenaud & Sonké	A(i), A(iv)	✓	✓	✓	–	–	
Scleria afroreflexa Lye	A(i)	✓	✓	✓	–	–	
Talbotiella bakossiensis Cheek	A(i)	✓	✓	✓	–	–	
Secamone racemosa (Benth.) Klack.	A(i)	✓	✓	✓	–	–	
Uvariodendron giganteum (Engl.) R.E.Fr.	A(i)	✓	–	✓	–	–	

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Vepris lecomteana (Pierre) Cheek & T.Heller	A(i)	✓	–	–	–	–	
Afrostyrax lepidophyllus Mildbr.	A(i)	–	✓	✓	–	–	
Dactyladenia johnstonei (Hoyle) Prance & F.White	A(i)	✓	✓	✓	–	–	
Eugenia fernandopoana Engl. & Brehmer	A(i)	–	✓	✓	–	–	
Nothospondias staudtii Engl.	A(i)	–	✓	✓	–	–	
Allophylus conraui Gilg ex Radlk.	A(i)	✓	✓	✓	–	–	
Amorphophallus preussii (Engl.) N.E.Br.	A(i)	✓	✓	✓	–	–	
Begonia furfuracea Hook.f.	A(i)	✓	✓	✓	–	–	
Drypetes staudtii (Pax) Hutch.	A(i)	✓	–	–	–	–	
Medusandra richardsiana Brenan	A(i)	✓	–	✓	–	–	
Memecylon dasyanthum Gilg & Ledermann ex Engl.	A(i)	✓	✓	✓	–	–	
Mikaniopsis maitlandii C.D.Adams	A(i)	✓	✓	✓	–	–	
Pavetta brachycalyx Hiern	A(i)	✓	✓	✓	–	–	
Coleus cataractum (B.J.Pollard) A.J.Paton	A(i)	✓	✓	✓	–	–	
Pseuderanthemum dispermum Milne-Redh.	A(i)	✓	✓	✓	–	–	
Sabicea xanthotricha Wernham	A(i)	✓	✓	✓	–	–	
Sarcophrynium villosum (Benth.) K.Schum.	A(i)	✓	✓	✓	–	–	

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Baillonella toxisperma Pierre	A(i)	–	–	–	–	✓	
Begonia bonus-henricus J.J.de Wilde	A(i)	✓	✓	✓	–	–	
Entandrophragma cylindricum (Sprague) Sprague	A(i)	–	–	–	–	✓	
Entandrophragma utile (Dawe & Sprague) Sprague	A(i)	–	–	–	–	✓	
Garcinia kola Heckel	A(i)	–	–	–	–	✓	
Hypolytrum pseudomapanioides D.A.Simpson & Lye	A(i)	–	–	–	–	–	
Loesenera talbotii Baker f.	A(i)	✓	✓	✓	–	–	
Lophira alata Banks ex Gaertn.f.	A(i)	–	–	–	–	✓	
Macropodiella pellucida (Engl.) C.Cusset	A(i)	✓	✓	✓	–	–	
Neoschumannia kamerunensis Schltr.	A(i)	✓	✓	✓	–	–	
Strychnos staudtii Gilg	A(i)	✓	–	–	–	–	
Trichostachys interrupta K.Schum.	A(i)	✓	✓	✓	–	–	
Afrofittonia silvestris Lindau	A(i)	✓	–	✓	–	–	
Afropectinariella pungens (Schltr.) M.Simo & Stévart	A(i)	✓	✓	✓	–	–	
Anthocleista microphylla Wernham	A(i)	✓	✓	✓	–	–	
Begonia duncan-thomasii Sosef	A(i)	✓	✓	✓	–	–	
Begonia oxyanthera Warb.	A(i)	✓	✓	✓	–	–	
Begonia preussii Warb.	A(i)	✓	✓	✓	–	–	

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Begonia prismatocarpa Hook. subsp. delobata Sosef	A(i)	✓	✓	✓	–	–	
Bulbophyllum bifarium Hook.f.	A(i)	✓	✓	✓	–	–	
Bulbophyllum teretifolium Schltr.	A(i)	✓	✓	✓	–	–	
Calochone acuminata Keay	A(i)	✓	–	–	–	–	
Chassalia laikomensis Cheek	A(i), A(iii)	✓	–	–	–	–	
Coffea bakossii Cheek & Bridson	A(i)	✓	✓	✓	–	–	
Dracaena kupensis Mwachala, Cheek, Eb.Fisch. & Muasya	A(i)	✓	✓	✓	–	–	
Hymenocoleus glaber Robbr.	A(i)	✓	✓	✓	–	–	
Justicia orbicularis (Lindau) V.A.W.Graham	A(i)	✓	✓	✓	–	–	
Kupeantha kupensis Cheek & Sonké	A(i)	✓	✓	✓	–	–	
Leptonychia kamerunensis Engl. & K.Krause	A(i)	✓	✓	✓	–	–	
Liparis goodyeroides Schltr.	A(i)	✓	✓	✓	–	–	
Magnistipula conrauana Engl.	A(i)	✓	✓	✓	–	–	
Manniella cypripedioides Salazar, T.Franke, Zapfack & Beenken	A(i)	✓	✓	✓	–	–	
Marsdenia magniflora P.T.Li	A(i)	✓	✓	✓	–	–	
Mussaenda epiphytica Cheek	A(i)	✓	✓	✓	–	–	
Napoleonaea egertonii Baker f.	A(i)	✓	✓	✓	–	–	
Oncoba	A(i)	✓	✓	✓	–	–	

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lophocarpa Oliv.							
Oxyanthus montanus Sonké	A(i)	✓	✓	✓	–	–	
Pararistolochia ceropegioides (S.Moore) Hutch. & Dalziel	A(i)	✓	–	✓	–	–	
Polystachya superposita Rchb.f.	A(i)	✓	✓	✓	–	–	
Pseudagrostistachys africana subsp. africana	A(i)	✓	–	–	–	–	
Psychotria bakossiensis Cheek & Sonké	A(i)	✓	✓	✓	–	–	
Psychotria darwiniana Cheek	A(i)	✓	✓	✓	–	–	
Psychotria podocarpa Petit	A(i)	✓	✓	✓	–	–	
Rhipidoglossum polydactylum (Kraenzl.) Garay	A(i)	✓	✓	✓	–	–	
Rinorea thomasii Achound.	A(i)	✓	–	–	–	–	
Schefflera hierniana Harms	A(i)	✓	✓	✓	–	–	
Staurogyne bicolor (Mildbr.) Champl.	A(i)	✓	✓	✓	–	–	
Stolzia grandiflora P.J.Cribb subsp. lejolyana Stévart, Droissart & M.Simo	A(i)	✓	✓	✓	–	–	
Streptocarpus lineatum (B.L.Burtt) Mich.Möller & M.Hughes	A(i)	✓	✓	✓	–	–	
Triclisia lanceolata Troupin	A(i)	✓	✓	✓	–	–	
Triclisia macrophylla Oliv.	A(i)	✓	✓	✓	–	–	
Uvariopsis korupensis Gereau & Kenfack	A(i)	✓	–	✓	–	–	
Uvariopsis	A(i)	✓	✓	✓	–	–	

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submontana Kenfack, Gosline & Gereau							
Vepris trifoliolata (Engl.) Mziray	A(i)	✓	✓	✓	–	–	
Xylopia africana (Benth.) Oliv.	A(i)	✓	✓	✓	–	–	
Drypetes magnistipula (Pax) Hutch.	A(i)	–	✓	✓	–	–	
Crateranthus talbotii Baker f.	A(i)	–	✓	✓	–	–	
Dorstenia astyanactis Aké Assi	A(i)	–	✓	✓	–	–	
Placodiscus opacus Radlk.	A(i)	✓	✓	✓	–	–	
Psychotria lanceifolia K.Schum.	A(i)	–	–	–	–	–	
Secamone letouzeana (H. Huber) Klack.	A(i)	–	✓	✓	–	–	
Acanthopale decempedalis C.B.Clarke	A(i)	✓	✓	✓	–	–	
Mendoncia camerounensis Breteler & Wieringa	A(i)	✓	✓	✓	–	–	
Psychotria retrofracta O.Lachenaud	A(i), A(iv)	✓	✓	✓	–	–	
Aframomum kodmin D.J.Harris & Wortley	A(i), A(iv)	✓	✓	✓	–	–	
Ledermanniella letouzeyi C.Cussett	A(i), A(iv)	✓	✓	✓	–	–	
Ledermanniella thalloidea (Engl.) C.Cusset	A(i)	–	–	–	–	–	
Liparis ascendens P.J.Cribb	A(i)	✓	✓	✓	–	–	
Vigna desmodioides R.Wilczek	A(i)	–	✓	✓	–	–	

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Beilschmiedia cuspidata (K.Krause) Robyns & R.Wilczek	A(i)	✓	✓	✓	–	–	
Bulbophyllum gravidum Lindl.	A(i)	–	–	✓	–	–	
Ardisia koupensis Taton	A(i)	✓	✓	✓	–	–	
Plagiosiphon discifer Harms	A(i)	✓	✓	✓	–	–	
Pseudosabicea batesii (Wernham) N.Hallé	A(i)	–	–	✓	–	–	

IPA criterion C qualifying habitats

HABITAT	QUALIFYING SUB-CRITERION	≥ 5% OF NATIONAL RESOURCE	≥ 10% OF NATIONAL RESOURCE	1 OF 5 BEST SITES NATIONALLY	AREAL COVERAGE AT SITE

General site habitats

GENERAL SITE HABITAT	PERCENT COVERAGE	IMPORTANCE
Forest - Subtropical/Tropical Moist Lowland Forest	50	Major
Forest - Subtropical/Tropical Moist Montane Forest	40	Major
Forest - Subtropical/Tropical Swamp Forest	–	
Wetlands (inland) - Permanent Rivers, Streams, Creeks [includes waterfalls]	–	
Rocky Areas - Rocky Areas [e.g. inland cliffs, mountain peaks]	–	

Land use types

LAND USE TYPE	PERCENT COVERAGE	IMPORTANCE
Nature conservation	100	Major

Threats

THREAT	SEVERITY	TIMING
Biological resource use - Logging & wood harvesting	Low	Past, likely to return
Natural system modifications - Fire & fire suppression	Low	Past, likely to return

THREAT	SEVERITY	TIMING
Transportation & service corridors - Roads & railroads	Medium	Future - inferred threat
Agriculture & aquaculture - Annual & perennial non-timber crops - Shifting agriculture	Low	Ongoing - trend unknown
Biological resource use - Hunting & collecting terrestrial animals	Medium	Ongoing - trend unknown

Protected areas

PROTECTED AREA NAME	PROTECTED AREA TYPE	RELATIONSHIP WITH IPA	AREAL OVERLAP
Bakossi National Park	National Park	protected/conservation area matches IPA	100

Conservation designation

DESIGNATION NAME	PROTECTED AREA	RELATIONSHIP WITH IPA	AREAL OVERLAP
Bakossi mountains IBA	Important Bird Area	IPA encompasses protected/conservation area	–
Bakossi mountains KBA	Key Biodiversity Area	IPA encompasses protected/conservation area	–

Management type

MANAGEMENT TYPE	DESCRIPTION	YEAR STARTED	YEAR FINISHED
Protected Area management plan in place	Unknown if management plan exists. Although officially gazetted, park boundaries have not been established and active management and policing is believed to be minimal or non-existent.	2007	–

Bibliography

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